REMARKS / ARGUMENTS

Claims 1-7 and 10-14 are pending in the application. Claims 1, 5-7, and 10-14 stand rejected as being obvious in view of US 4,169,907 to Barker, et al. and US 5,019,202 to Kawahata, et al. Claims 2-4 stand rejected as being obvious in view of Barker, Kawahata, and US 5,665,457 to Sato, et al.

It is respectfully submitted that the prior art of record does not suggest or disclose the printing process defined by the pending claims. It is requested that the outstanding rejections be withdrawn and that a Notice of Allowance once again be issued.

Claim 1 is directed to a printing process that includes applying in a first pattern a coating containing a surface tension lowering additive to a substrate. The coating is energy cured by electron beam processing. An ink is then applied over the substrate. Because of the surface tension lowering additive in the coating, the ink flows from the coating pattern areas to the non-pattern areas. The ink is allowed to dry and forms a series of raised ridges.

In contrast, Barker discloses first applying a printable base to a substrate. The printable base does not contain a surface tension lowering additive nor is it energy cured. Barker then prints a silicone containing ink in a pattern on top of the base and allows the ink to dry. The ink is not energy cured. A coloring pigment liquid topcoat is then applied to the printable base, over the printed pattern. The ink repels the liquid topcoat causing the liquid topcoat to form ridges. The liquid topcoat is then dried and baked.

While Barker includes some steps that are similar to the present invention, it contains an additional step that is unnecessary in the present invention, namely first applying a printable base to the substrate. This additional step makes the method more cumbersome, resulting in potentially longer manufacturing times and greater manufacturing costs.

Not only does Barker require an additional step, it also, as the Examiner acknowledges, lacks key elements of the present invention, namely (1) electron beam curing of the printable base or the silicone containing ink and (2) printing of the printable base or the silicone containing ink in parallel lines. The Examiner alleges that Kawahata and Sato, respectively, teach these elements.

However, one of ordinary skill in the art who combines Barker with Kawahata and Sato would not reach the present invention. The methods recited in each of these references involve first printing an ink with a repellant therein, and then flooding the ink-printed area with a topcoat/coating. The presently claimed method, in contrast, reverses these steps by first coating (and subsequently curing) the substrate and then applying the ink. This difference is not insignificant. By applying the coating first (usually using laser engraved gravure cylinders), the coating can act as an ink boundary preventing unsightly flow outs. The boundary properties of the coating are further enhanced because the surface tension lowering additive is present in the coating instead of the ink (as is the case in the cited references). The end result is a method that yields crisp ink images (resulting from fewer flow outs).

The presently claimed method has further advantages over the cited prior art. First, the application of an electron beam cured coating with a surface tension lowering additive prior to printing of the ink produces higher ridges due to its 100% solids chemistry (see paragraph 10 of the present application). Second, the application and curing of the coating prior to printing with ink allows for high press and production speeds because the electron beam curing process allows for substantially instantaneous curing (see paragraph 12 of the present application). The substantially instantaneous curing minimizes production time because, unlike the drying time that is likely necessary in Barker (before application of the topcoat), Kawahata (before application of the coating), and Sato (before application of the coating), there is little time needed before the next layer can be added.

Finally, with respect to claims 5 – 7 and 10 – 13, the examiner alleges that it would be obvious "to use any desired coating material (metallic, multicolored, etc.) on any desired substrate (i.e., foils, clear films, etc.) to produce any desired coloring or effect". However, using the presently claimed method to print a pattern on a metallic or reflective substrate has particular aesthetic value, namely enhanced color-shifting characteristics and enhanced durability. Thus, the use of the metallic substrates is far superior to both Sato's and Kawahata's mere use of paper as the substrate, because paper does not have the light reflection properties or durability of a metallic substrate. It would not have been obvious to select these materials as part of the overall

combination of the cured coating, with the surface tension lowering agents and the ink applied there over.

In sum, there is no suggestion or disclosure in any of the cited references for applying a coating containing a surface tension lowering additive before the ink, nor is there suggestion or disclosure for using the additive in the coating as presently claimed. As a result, the present invention provides for a method with significant benefits over the prior art, such as creating crisp, sharp images that appear to color shift when viewed from different angles without the need of a separate printable base layer and without the need for intermediate ink drying steps.

It is respectfully requested that the present rejections and objections be reconsidered and withdrawn. A Notice of Allowance is solicited. If direct communication will expedite the allowance of the application, the Examiner is invited to telephone the undersigned attorney for applicant.

Respectfully submitted,

SCOTT W. HUFFER, *ET AL.*

BY: _____

Thomas J. Durling
Reg. No. 31,349
DRINKER BIDDLE & REATH LLP
One Logan Square
18th & Cherry Sts.
Philadelphia PA 19103
Phone: (215) 988-3307
Fax: (215) 988-2575

Attorney for Applicant